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PROTECTING GRAIN CROPS FROM DAMAGE BY WILD FOWL

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Introduction

In these days of waterfowl scarcity, when Federal, State, and local agencies entrusted with the conservation of wildlife are practically unanimous in the opinion that the wild fowl of North America are in a precarious condition and that some species are possibly in danger of extermination, it may seem strange that suggestions for the reduction of damage by them are called for. Several things have contributed to the present situation.

It is true that locally or periodically wild fowl have caused losses to grain and certain truck crops ever since agriculture became established in their migration flyways. At the time of the World War, when every effort was being made to conserve food, damage inflicted by ducks and geese attracted attention, and in some localities steps were taken to reduce such depredations. Again, under the conditions prevailing during periods of extreme drought, when grain production was severely curtailed, farmers in some sections found that ducks, deprived of their normal water areas and aquatic food supplies and goaded by the urge of self preservation, turned to the depleted farm crops. In fact, the great reduction in surface water tended to concentrate the remaining waterfowl in the very areas where limited crop production was still possible. This has resulted in the present anomolous situation of duck damage (sometimes of serious proportions to the individual farmer) occurring during a period when the national supply of waterfowl is becoming precariously low.

If, in times of bountiful crops, the farmer may legitimately seek means for protecting the profits of his labors, this privilege may take on the aspect of stark necessity when Nature reduces his returns to something less than the actual needs of his family and his livestock.

To conserve at any cost the remnants of the waterfowl and at the same time afford adequate protection to the crops threatened by these wild birds is the perplexing problem that confronts governmental agencies administering the wildlife resources. To adopt the policy of permitting shooting in the close season or at night, in localities where damage is being inflicted without amply and adequately enforced restrictions might seal the doom of some species. On the other hand, to deny the right of property protection or to fail otherwise in affording some measure of relief in response to legitimate complaints of crop damage might break down the whole structure of wildlife protection and destroy, even more rapidly, the remnants of our flocks of waterfowl.

The suggestions for crop protection herewith presented involve methods less drastic than the destruction of the offending birds. Though a situation may arise in which the milder methods do not bring about all the results desired, such methods have been successful, or at least helpful, in many instances. It is for the definite purpose of setting forth means of protecting crops without destroying the birds that this circular has been prepared.

Nature of Complaints

Both geese and ducks have been accused of damage to crops, the former, to a large extent, to fields of sprouting wheat and barley, and the latter to ripened or shocked grain, particularly rice, barley, wheat, corn, and milo, as well as to fields of freshly seeded barley, young stands of alfalfa, and certain truck crops. It may also be mentioned that in recent years sandhill cranes, whose depredations may also be controlled by the methods here suggested, have been accused of damage to shocked grain in the Texas Panhandle and New Mexico.

In general, reports of damage by geese have come from scattered points in the East (New York, Maryland, Illinois, Minnesota, North Dakota, and South Dakota) and from the West Coast States of Washington, Oregon, and California. Few reports of damage by ducks come from points east of the Mississippi River. The ricefields of Arkansas, Texas, and California; the cornfields of Nebraska, Colorado, and Idaho; the milo, kafir, sorghum, and millet fields of Colorado, Oklahoma, and Texas; and the ripened or shocked wheat and barley fields of the western Canadian Provinces, the Dakotas, Montana, Utah, Washington, and California, have been the sources of most complaints against grain-eating ducks. Truck farmers in the vicinity of Kennewick, Wash., and in the Imperial Valley in California, also complain bitterly of damage to spinach, lettuce, and beets, and seed growers in Skagit County, Wash., suffer severe losses to turnip and cabbage seed crops as a result of the activity of ducks, mainly widgeons.

Severity of Damage

Damage by geese.--Geese are essentially browsers and, since they are present in this country in their largest numbers late in fall, in winter, and early in spring, their most intimate contact with grain crops occurs during

the early growing period. "Pasturing" by large flocks of geese, particularly on wheatlands along the Columbia River and in California, has seldom failed to arouse apprehension regarding the safety of the crop. At times the geese may cut back the plants to the surface of the ground, and in wet weather may even do a certain amount of up-rooting.

It has been a frequent observation of Biological Survey investigators, however, as well as of the grain raisers themselves, that grazing by geese not only may not reduce the ultimate crop raised, but through the process of stooling, may make the individual wheat plants even more thrifty. That the early retarding of growth permits weeds to secure a foothold has been claimed but not substantiated through careful experimentation. When, however, the ground is soft, there may be some loss through actual removal of the plants.

Damage by ducks.--Long-standing have been the complaints of rice growers against ducks, a situation made particularly acute because of the aquatic environment in which the crop is grown and the usual proximity of marsh areas. Investigations by representatives of the Biological Survey some years ago disclosed that damage by ducks in the Sacramento Valley occurred as soon as the heads of the earliest varieties of rice began to fill. Pintails, together with mallards in fair numbers, were the principal offenders, sometimes as many as 5,000 feeding in one small field. Although the acreage destroyed was less than 5 percent of the rice area, individual losses were often disastrous.

Frequently damage to rice by ducks is the result of adverse weather conditions that prevent the threshing and removal of the crop when ripe. In some instances such crops could be saved with little loss were it not for attendant duck depredations; in other cases the elements alone must be charged with the losses suffered. Whenever shocked fields of rice are flooded by late rains the likelihood of damage by ducks is greatly increased.

Damage inflicted by ducks to shocked wheat and barley is similar in character to that inflicted on mature rice. This may be accentuated when harvesting is delayed by adverse weather conditions or when a heavy snowfall covers other food supplies of the birds. Even in normal years a certain amount of damage may be expected to shocked grain near extensive marsh areas. This is particularly true in some sections of Canada where the borderline of agriculture is contiguous to duck-nesting areas.

Some of the late-planted or slow-maturing forms of milo and kafir corn, even in localities as far south as the Panhandles of Oklahoma and Texas, are exposed to duck attack whenever a prevalence of surface water attracts large flocks. Most of such depredations are committed at night, sometimes with a severity and suddenness that leaves the farmer with seriously damaged crops before he realizes that anything has happened.

Local damage to ripened Indian corn has been experienced over a wide area in the Great Plains and Rocky Mountain region whenever the crop has been left in the field late in fall or throughout the winter. In localities where this crop is "hogged off", as is the case in western Nebraska, the crop becomes even more vulnerable to attack by ducks. Hogs in feeding on the standing crop shatter the ripened ears and scatter many kernels, which if allowed to re-

main they would eventually eat. With ducks in the vicinity, however, the corn scattered each day is removed by the night-feeding flocks. In some sections this loss has been estimated to be equal to a fourth of the crop.

Peculiar in its nature and of marked severity is the damage sometimes inflicted by ducks on sprouting barley in the Imperial Valley, Calif. This crop is started during the winter months by flooding the seeds that have been drilled or harrowed into the prepared land. The submerged barley is a great attraction to wintering waterfowl, and farmers have been known not only to lose the newly planted seed but to have their land rendered unsuited to immediate replanting through the compacting and deaerating effect of the "puddling" and trampling of hundreds of bills and feet.

Occasionally fields of young alfalfa and, in the northwestern coastal region, certain truck crops, as turnips and cabbage, are attacked by ducks, widgeons being the principal offenders, against which combative measures there have been employed.

Obligations of the Farmer

Wild fowl, in common with certain other birds, mammals, insects, plant diseases, drought, frost, and erosion, are among the natural agencies that at times are inimical to the interests of man. With respect to agriculture in its broadest sense, the destruction wrought by wild fowl, however serious it may be locally, is in fact a relatively minor element among the hazards that have to be met and overcome by the American farmer.

Although the farmer is the victim of these unfortunate circumstances, it does not follow that he is wholly free of certain obligations and responsibilities in the matter. Bird problems must be met in the most practical and economical manner possible. At times aggressive measures are called for; at other times the correct solution may lie in a program of avoidance or prevention, especially when combative measures are ineffective, expensive, or otherwise unsound. Above all, control of any sort should not be advocated when the direct or underlying cause of damage rests in farm practices that can be altered at an expense less than the expectant loss through bird activities.

Most of the damage inflicted by waterfowl is on crops that are exposed late in the season. Sometimes this cannot be avoided, yet there are many cases where foresight and added emphasis on getting crops out of the fields, into stacks, or under cover would have avoided damage. To leave shocked crops in fields until they are gradually used as feed in the course of the winter is inexcusable in those areas where duck damage is a more or less regular annual occurrence. Furthermore, when the saving effected by a farm practice such as the hogging off of the corn crop is constantly being jeopardized or materially lessened by duck depredations that are the direct result of that practice, its value becomes questionable. Some farmers in northwestern Nebraska, therefore, have reverted to the earlier procedure of hand-picking and storing the corn crop rather than risk the annual threat of duck damage or the expense of herding out the birds. Manifestly, in areas where hog-cropping is practiced, it is impossible for the individual farmer or a small group of farmers to kill or

frighten away all the ducks that might visit their fields at night. One cannot set out a banquet table for the birds and then expect them not to use it. Under these conditions, avoidance of damage by a change in farm practice is simply sound common sense.

Obligations of the Federal Government

The protection given to migratory waterfowl and the regulations governing their killing are based on the treaty negotiated in 1916 between the United States and Great Britain for the protection of migratory birds in the United States and Canada. Under the Migratory Bird Treaty Act and the regulations to give effect to this treaty in this country, the Secretary of Agriculture is authorized, "when information is furnished. . . that any species of migratory bird has become, under extraordinary conditions, seriously injurious to agriculture or other interests in any particular community," to have an investigation made "to determine the nature and extent of the injury, whether the birds alleged to be doing the damage should be killed, and, if so, during what times and by what means. Upon his determination an appropriate order will be made". Before action may be taken by individuals or local agencies pursuant to any order that may be issued by the Secretary of Agriculture for the killing of migratory birds, similar and concurrent authorization must be obtained from the appropriate State conservation officials.

It may be explained that, in the issuance of permits for the killing of migratory birds destructive to crops, a conservative policy, based on the theory that marked damage first must be demonstrated, has been adopted. Only a very few such permits of limited duration and scope have been granted in this country for the destruction of waterfowl since the ratification of the treaty in 1916. In each instance a careful investigation of the alleged damage was made before the permits were issued.

In view of the Nation-wide critical condition of waterfowl, it appears unlikely that there will be any change in the policy in the granting of permits for the destruction of these birds. Every consideration will be given to honest complaints of serious damage, but it is felt that there should also be manifest on the part of all complainants appealing for aid a demonstrated willingness and a desire to remedy the situation by means less drastic than killing, before resorting to the latter method. Certainly any appeal in which there is a desire merely to obtain shooting privileges (a factor that has tainted some earlier requests) will not be given favorable action. There must be, in all instances, a real grievance and an honesty of purpose that is beyond question.

It may also be emphasized that there is neither legislative authority nor appropriated funds under which the Federal Government can reimburse farmers for damage inflicted by migratory birds.

Suggestions for Crop Protection

In offering the following suggestions for crop protection let it be explained that there is no magic wand nor any single or simple procedure that will bring successful results on all occasions. Furthermore, the protection of crops by any means whatsoever requires time, labor, and often expense. The

method to be used must be determined by the circumstances and the ability of the farmer to furnish labor or to stand the expense involved. It is true that the cost of bombing or the use of flash guns is beyond the reach of many farmers. Yet, these are mentioned along with less costly procedures for the benefit of those who may care to avail themselves of the suggestions.

Sportsmen as well as those who have had occasion to work out measures for protecting crops against birds know that birds soon learn to recognize and shun areas where members of their flocks have met misfortune. When persecuted by day, wild fowl change to a night-feeding schedule, a reaction that has added greatly to the difficulty of crop protection. The discharge of a single gun on a duck marsh at the height of the hunting season may send into the air all birds within hearing distance. On the other hand, the equally loud but harmless "pop" of a gasoline engine or the occasional backfire of an automobile will be wholly unnoticed by flocks resting in areas where they are never molested. It happens, however, that much of the damage inflicted by waterfowl occurs during the latter part of the hunting season or soon after its close. During this period most of the birds are so gun shy that even harmless frightening measures possess some merit, despite the fact that repeated use will gradually lessen their value.

The shotgun.--Of the means at the disposal of the farmer there is nothing more readily available or more frequently used than the shotgun. To recommend its use in the protection of crops during the open season on wild fowl is superfluous and almost trite, but when the hunting seasons have closed, or after the evening hour for cessation of shooting, the use of powder and shot with intent to kill waterfowl becomes a matter requiring sanction by legal authority. At such times blank cartridges or those in which the shot have been replaced by several wads will at least provide a legal basis for operations and may be used with some effect in protecting crops. It may be pointed out also that night shooting with shot increases the danger to human beings and livestock. Where night shooting has been permitted in rice areas, the trampling of the grain by hunters eager to retrieve birds has at times caused losses as great as those inflicted by the birds themselves.

The rifle.--Rifles cannot legally be used in hunting waterfowl, but under permit from the Secretary of Agriculture, they may be used in frightening birds from crop lands. A .22 firing a long rifle cartridge is as effective as, and less dangerous than, heavier guns, and the ammunition is less expensive. The long rifle bullets have a tendency to tumble end over end, producing a loud whistling, particularly when fired from a gun with somewhat worn riflings. The watchers are usually placed on elevated stands located so as to command a wide view of the field. A shot or two fired over or near the marauding birds is usually effective in causing them to move on.

Herding of geese.--"Riding herd" on geese has long been practiced in shocked grainfields in California and some other western States. In fields of large size several riders may be needed, armed with whatever frightening devices their horses will stand for. It is essential that herding begin as soon as the first of the geese arrive; this will prevent them from accustoming themselves to the area and attracting others to their ranks.

Scarecrows for geese.--The time-honored and often belittled human effigy has a certain value in protecting grainfields from geese, particularly if there is hunting in the vicinity. Scarecrows are more effective if their dress is changed and they are moved every two or three days. Their value, of course, is restricted to daylight hours, and for that reason they have no effect on night-feeding ducks. In Texas, pieces of bright tin suspended from the ends of a crossarm, where they will be moved by any slight air current, have proved of value against geese.

Fireworks[1].--Aerial bombs, known in the pyrotechnic trade as aerial flash salutes, have been used with considerable success in driving ducks out of western ricefields. These are discharged from fiber or iron-pipe mortars placed in the ground and directed over the fields. The bombs are supplied with a fuse that leads to the propelling charge; this expels a projectile that explodes high in the air. The bombs are of two types--one for night work explodes with a sharp report and a blinding flash; the other, for use on dark days when ducks sometimes invade the ricefields, liberates a cloud of dense smoke. The bombs, handled by dealers in pyrotechnic supplies, vary in size and power and their cost ranges accordingly, from about 50 cents to $7 a dozen. Often the discharge of a single bomb will send the duck flock from the field, but vigilance is required for some time thereafter lest they or others return.

To a less extent, and somewhat less effectively, other forms of fireworks have been employed in herding ducks out of grainfields. Roman candles and sky-rockets should not be used, however, when the fields are dry and there is danger of fire. In Mexico, owners of grainfields have even employed small boys in the enjoyable occupation of discharging firecrackers in or about the fields.

Lights and flash guns.--An ordinary lantern is of help in herding out night-feeding ducks, and more powerful sources of light, such as an automobile headlight or spotlight of reasonable power which permits directing the rays, are even more effective. Some years ago a search-light on the banks of the Susquehanna River was effective in keeping flocks of canvasback ducks from feeding on a wild celery bed and picking up quantities of phosphorous which had been accidentally dropped there.

An ingeniously constructed acetylene flash gun that has proved useful in duck herding is on the market. This contrivance, which contains a pilot light and reflecting mirrors, also has an exploding chamber into which a mixture of acetylene gas and air enters. This is detonated at intervals, the frequency of which is controlled by the rate of water flow on a quantity of carbide generating the gas. After every explosion, the flash gun, suspended on a spring, bobs up and down and rotates several times back and forth, causing the pilot light to flash across the field. Such flash guns have sold at about $35 each.

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[1] A list of dealers in pyrotechnic supplies and flash guns may be obtained from the Biological Survey, U. S. Department of Agriculture, Washington,D. C.